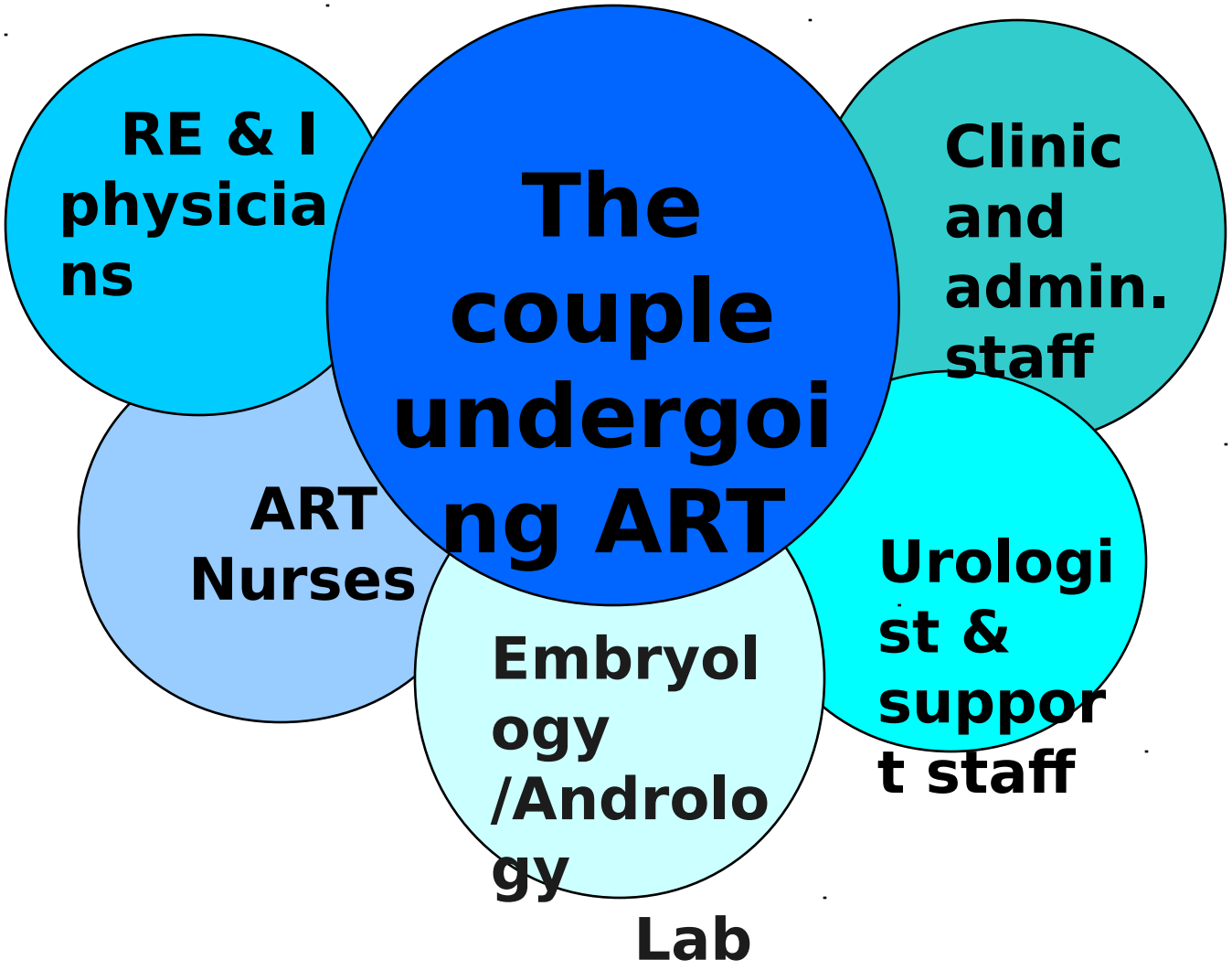
Federal Program of Reproductive Endocrinology

Objectives

- Understand the ART Program
  - Walter Reed Army Medical Center
  - ART Institute of Washington, Inc
- Understand ART and role in infertility
- Pre-ART counseling and consent

The ART Team


RE & I physicians
The couple undergoing ART
Clinic and admin. staff
ART Nurses
Urologist & support staff
Embryology /Andrology Lab

YOUR A.R.T. PROVIDERS

- **CDR Jeffrey McKeeby, MD (ART Program Directo**
- **Jim Segars, MD (Medical Director)**
- **COL Alicia Armstrong, MD (REI Division Directo**
- **Andrew Levi, MD (Senior REI Fellow)**
- **LCDR William Catherino, MD PhD (REI Fellow)**

ART Institute of Washington, Inc

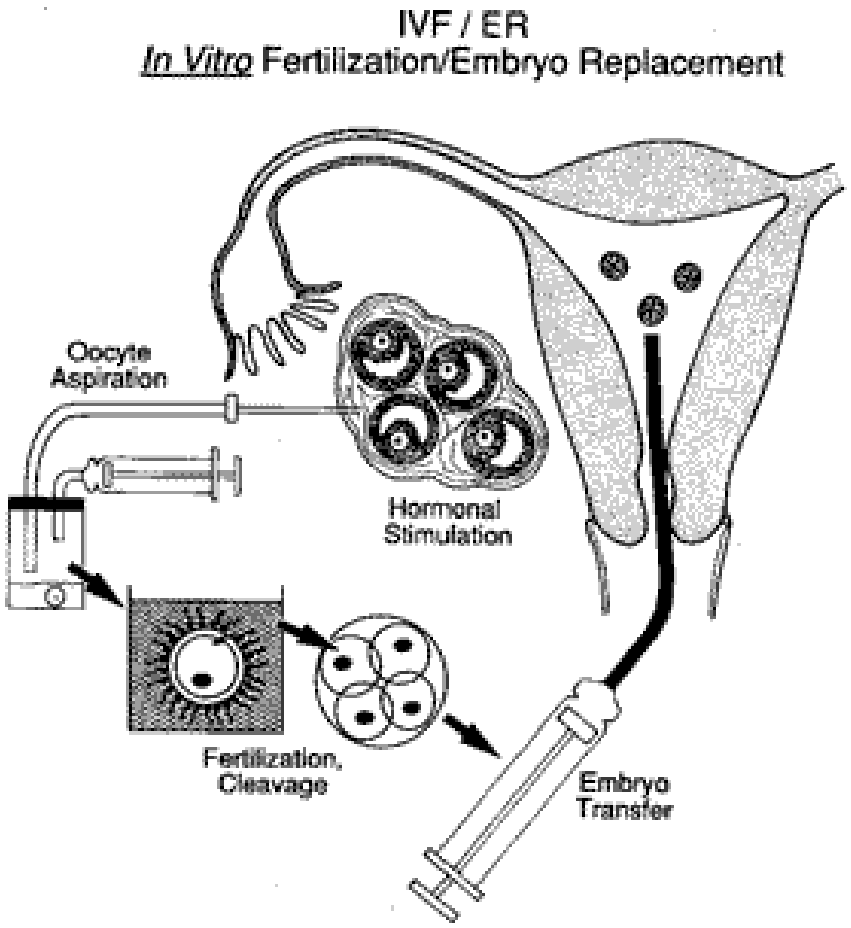
at Walter Reed Army Medical Center

- IVF Nurse Coordinator: Donna Materia,RN
- IVF Nurses: Darshana Naik, RN
  Stephanie Hosid, RN
- Laboratory Director: Jacques Cohen, PhD
- Laboratory Staff: Aidita James, PhD
  Kerry Polson, MS Sasha Hennessy, BS
- Financial Coordinator: Leslie Strothers
- Administrative Assistant: Petrina Thompson

Scope of the Problem

- **2-3 million couples in the US**
- **13-15% of reproductive age couples**
- **40% seek medical care**
- **25% seen by subspecialist**

What is In Vitro Fertilization?



Indications for IVF

- **Tubal factor**
- **Male factor with ICSI**
- **Unexplained**
- **Ovulatory dysfunction**
- **Endometriosis**

Provides information on fertilization & embryo quality

What Is Needed For IVF?

Oocytes

Sperm

(Let us know if you anticipate a problem with collection on retrieval day)

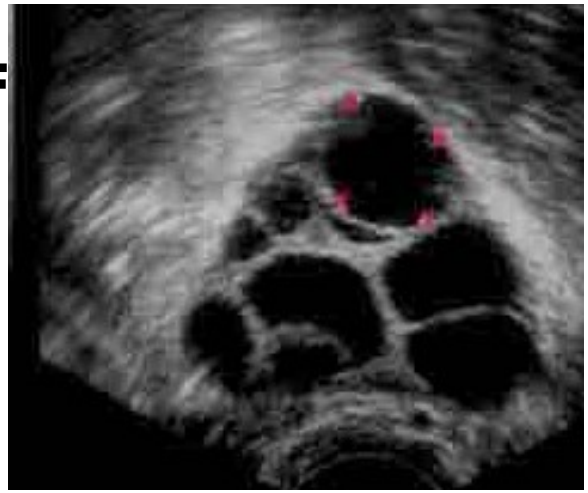
Uterus

Oocytes (Eggs)

- **Eggs are stimulated to grow with gonadotropins (ovarian hyper-stimulation)**
  - **FSH; Gonal-F, Follistim, Fertinex**
  - **hMG; Repronex, Humegon**
  - **hCG; Profasi**
- **Approximate number and maturity of eggs by measuring follicles by ultrasound**

Risks of Ovarian Stimulation

- **Severe Ovarian hyper-stimulation syndrome**
  - **Occurs in 1-2% of cases**
  - **Fluid problems**
    - **May require removal with needle**
    - **May lead to kidney problems**
  - **Blood clots**
  - **Failure to embryo transf**



Risks of Ovarian Stimulation

- **Ovarian Torsion**
  - **Large ovary may twist and block blood supply**
  - **Could affect future fertility**
- **Increase in risk of Ovarian Cancer**
  - **Controversial**
  - **Current data does not support**
- **Cancellation**

Cancellation Policy

- **Fewer than 6 follicles for IVF cases**
- **Fewer than 10 follicles for ICSI cases**
- **Estradiol level < 500 on day 8-10**

Cancellation Policy

- **Options after cancellation**
  - **Repeat later and consider alternate protocols**
  - **Recommend donor oocyte program or adoption**

- **Very disappointing at first, but will save time & money in the long run**

Oocyte (Egg) Retrieval

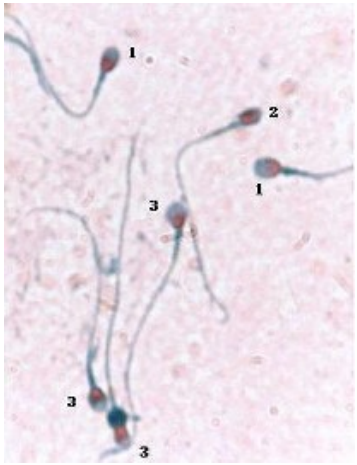
- **Eggs are retrieved when follicles of sufficient number and size**
- **Retrieval is performed through the vagina under ultrasound guidance**
- **Sedation is used for pain control**
- **You will feel and remember very little**

Risks of Oocyte (Egg) Retrieval

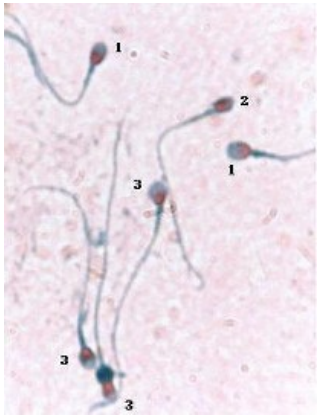
- **Surgical**
  - **Bleeding**
  - **Infection**
  - **Damage to adjacent organs**
- **Anesthesia**
- **Failure to obtain oocytes or eggs**
  - **Reported up to 5%**
  - **Usually associated with error in injection of hCG**

Sperm

- **Obtained by masturbation on day of egg retrieval**
  - **Should have prior ejaculate on day wife receives hCG injection**
- **Some may require sperm retrieval for very low counts**
  - **MESA**
  - **TESE**



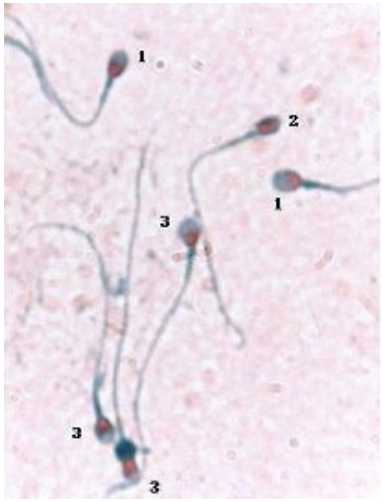
Sperm

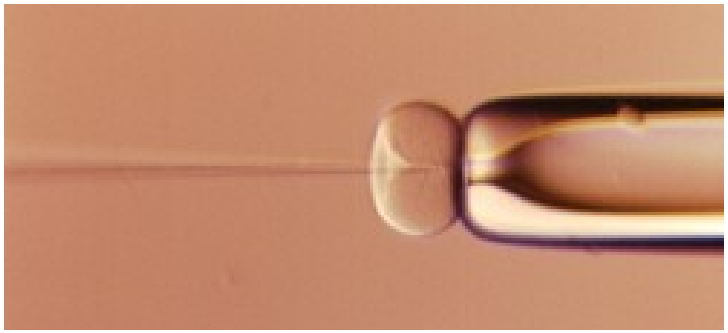


- Sperm sources
  - Husband
  - Donor
    - Severe male factor who do not desire ICSI
    - “Back-up”
    - Single active duty females must use sperm from sperm bank (Donor)
    - You are responsible for obtaining donor sperm and having it delivered to our facility at least the day prior to the egg retrieval

Embryos and Fertilization

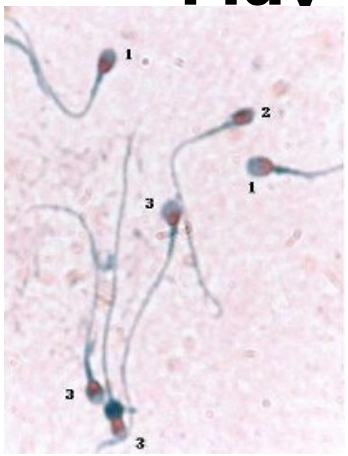
- **Fertilization**
  - **In vitro Fertilization (IVF)**
  - **Intracytoplasmic Sperm Injection (ICSI)**

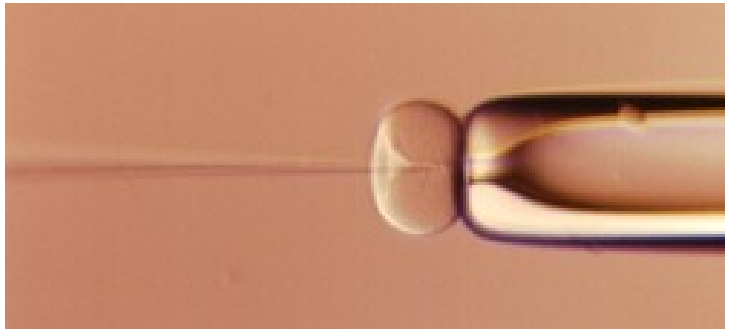




Embryos and Fertilization

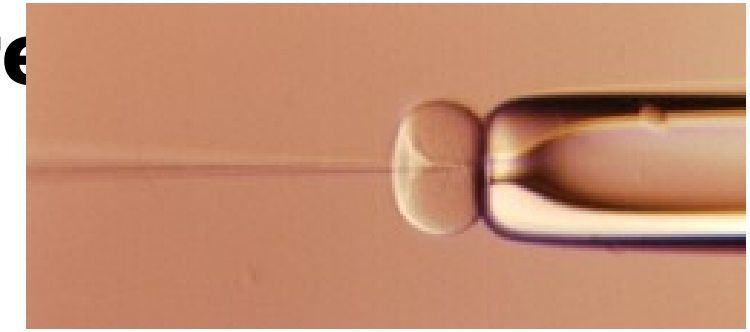
- **Risks of Fertilization**
  - **Failed Fertilization (1-5%)**
    - **Will require ICSI**
      - **Please sign ICSI consent in this event**
  - **Abnormal Fertilization**
    - **No treatment**
    - **May be sperm or egg related**



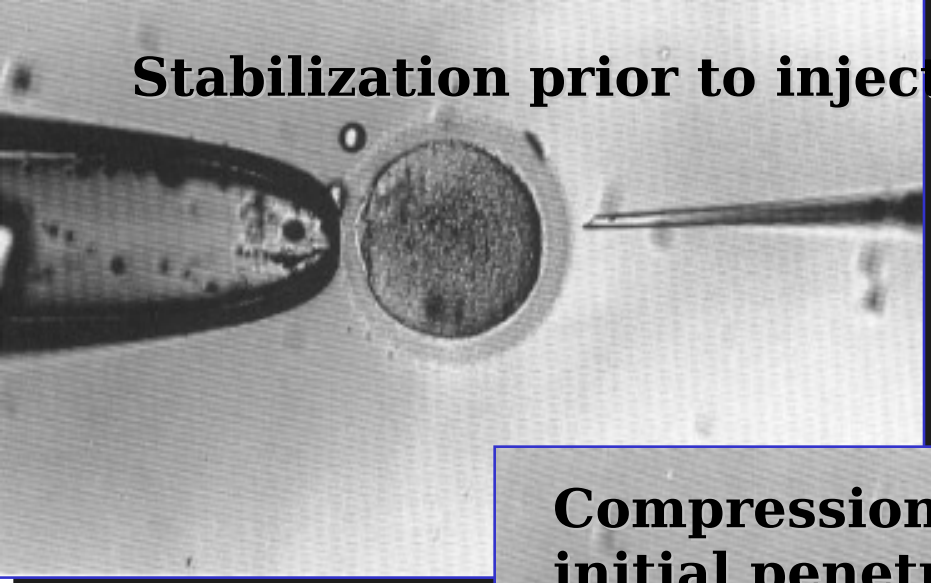


Indications for Intracytoplasmic Sperm Injection (ICSI)

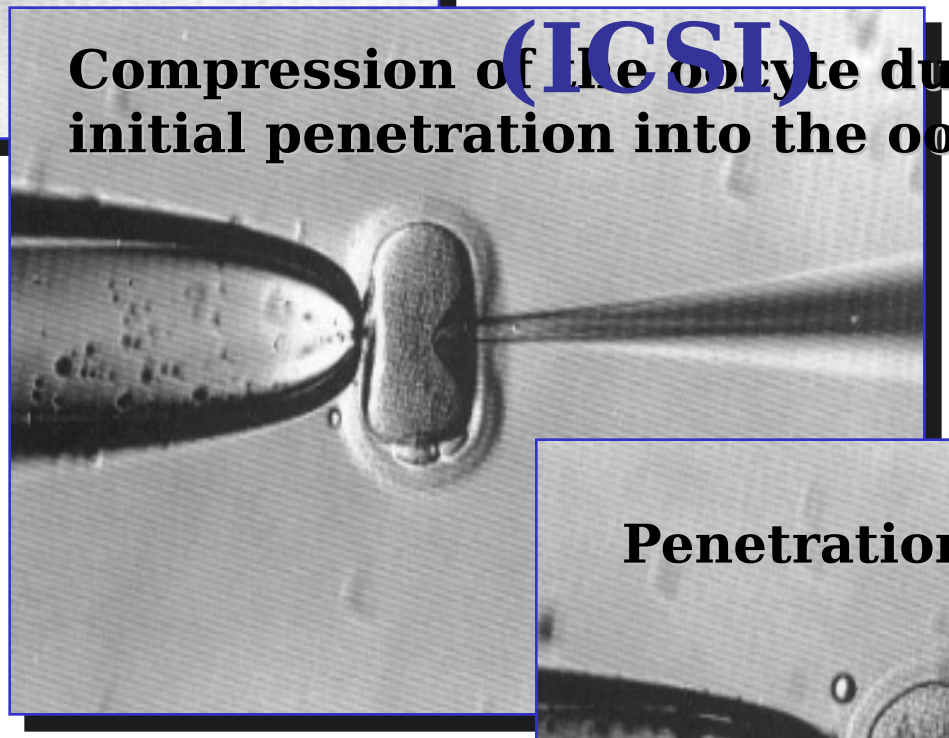
- Very low sperm count
  - Recommended by our lab director based on the male evaluation
  - Prior failed IVF fertilization
  - Urology Referred patients
  - ICSI does not corre
    and egg factors



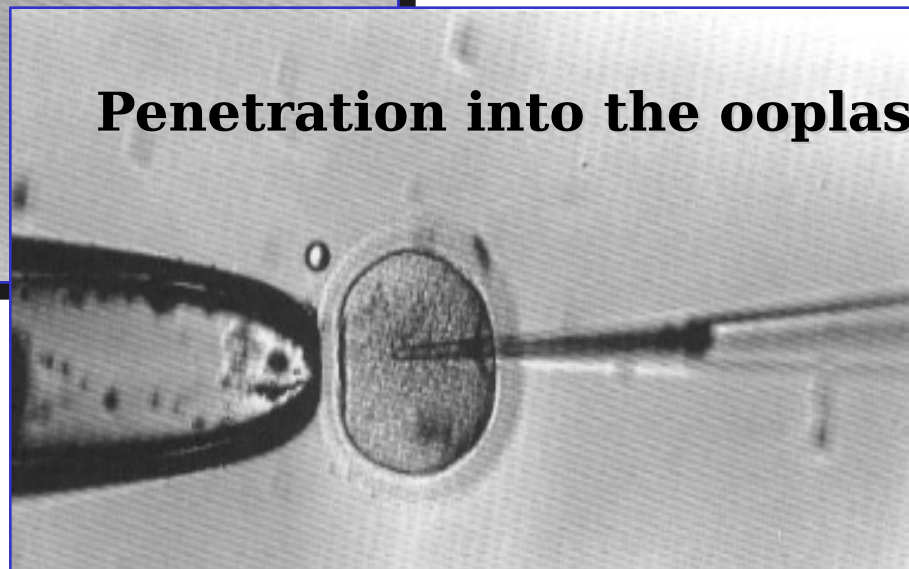
Intracytoplasmic Sperm Injection (ICSI)



Stabilization prior to injection



Compression of the oocyte during initial penetration into the ooplasm



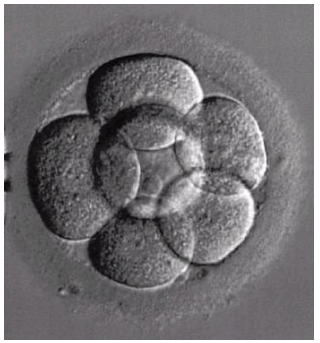
Penetration into the ooplas

Embryos and Fertilization

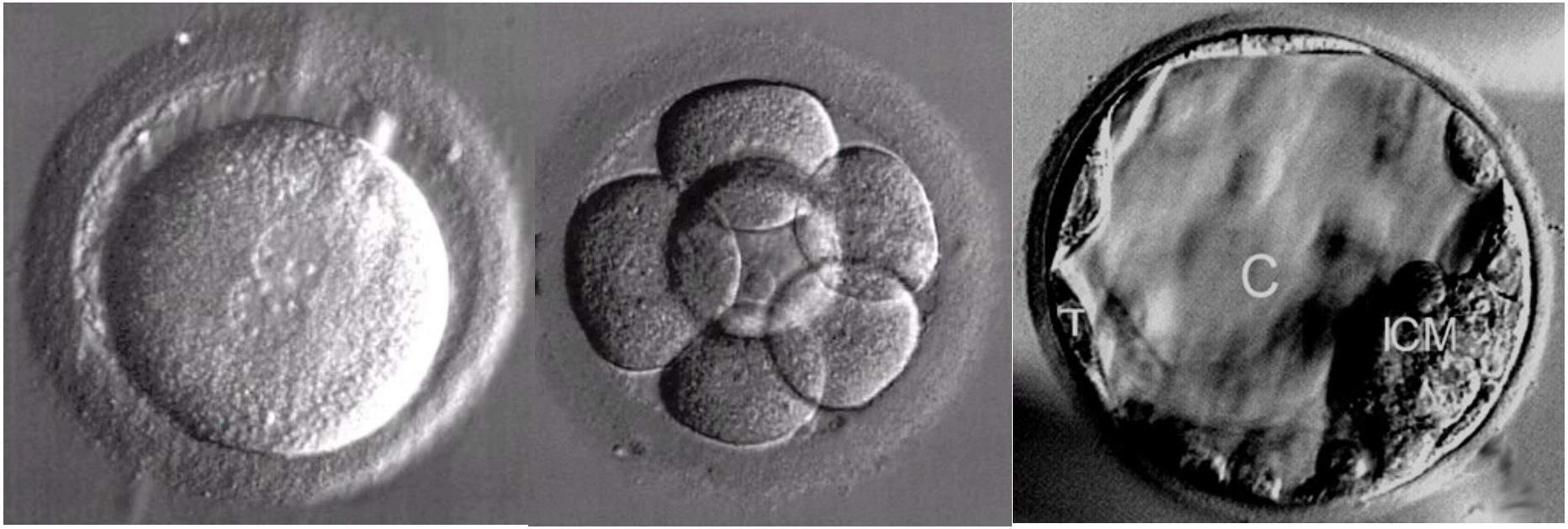
- **Embryos first looked at on the day following egg retrieval (Day-1)**
- **Embryos graded on day-1,-3, and –5**
- **Determines**
  - **Embryo transfer day**
  - **Number to be transferred**

Grading of Embryos

- **Based on cell number (rate of growth)**
- **Amount of fragmentation (efficiency of division)**
- **Equal size of cells (efficiency of division)**
- **Determines chance of implantation only**
- **Does not correlate with number of chromosomes**
- **Does not correlate with health and ability of child**



Sequential Grading System

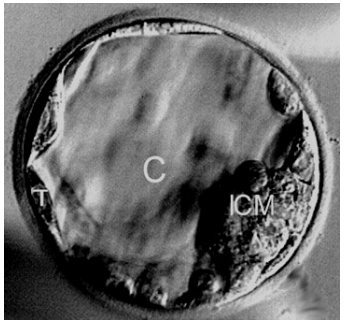


Zygote (Fertilized Egg) **Day 3 Embryo** **Day 5 (Blasto**

Early Embryo Development

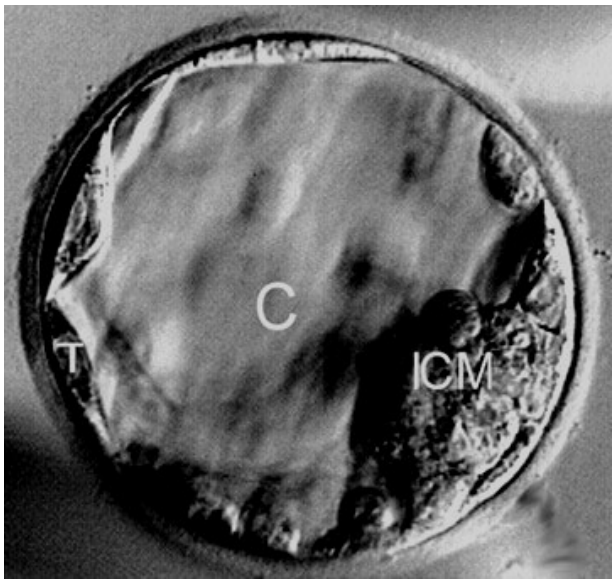
Growing to Blastocyst

- **Based on number of high grade day 3 embryos**
- **No guarantee that any embryos will make it**
- **~ 50% implantation rate**
- **Transfer of only one or two embryos**
- **Reduces risk of high order multiples**
- **Good for determining which excess embryos are worth freezing**



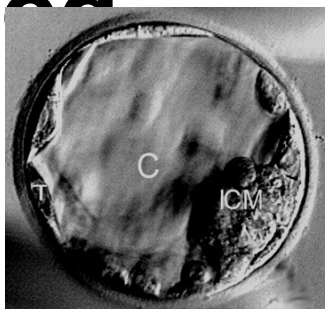
Embryo Transfer

- **Embryo-transfer performed 2-5 days following egg retrieval**
- **Transfer performed through cervix under ultrasound guidance**



Embryo Transfer

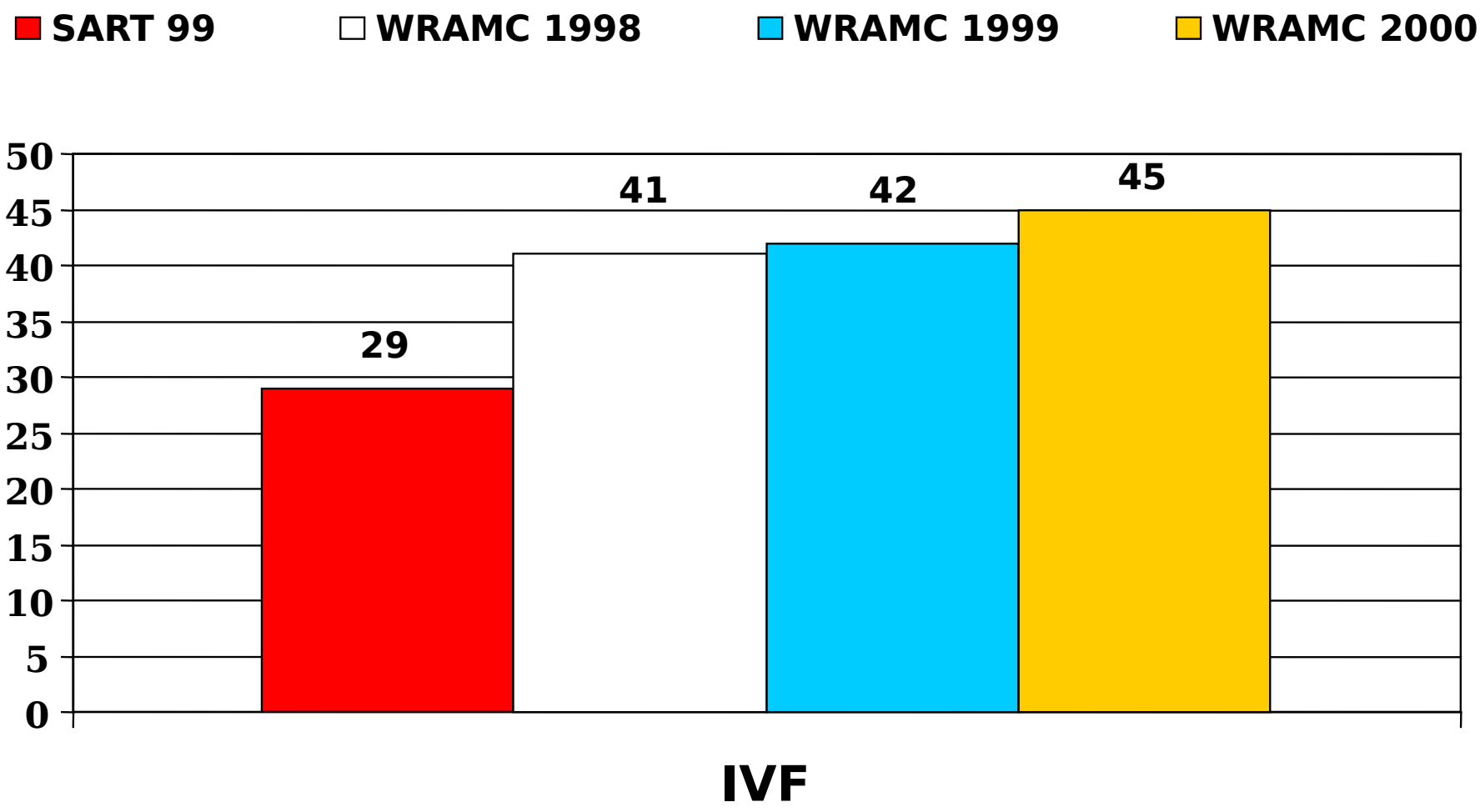
- **Embryo-transfer feels like having a Pap smear**
- **Must have a full bladder**
- **We may perform a “Mock” or Sham” Embryo-transfer (without embryos) just prior to real transfer if prior trial transfer was difficult or if not performed**



Risks of Embryo-transfer

Pregnancy!

Deliveries per Retrieval for our program vs. SART



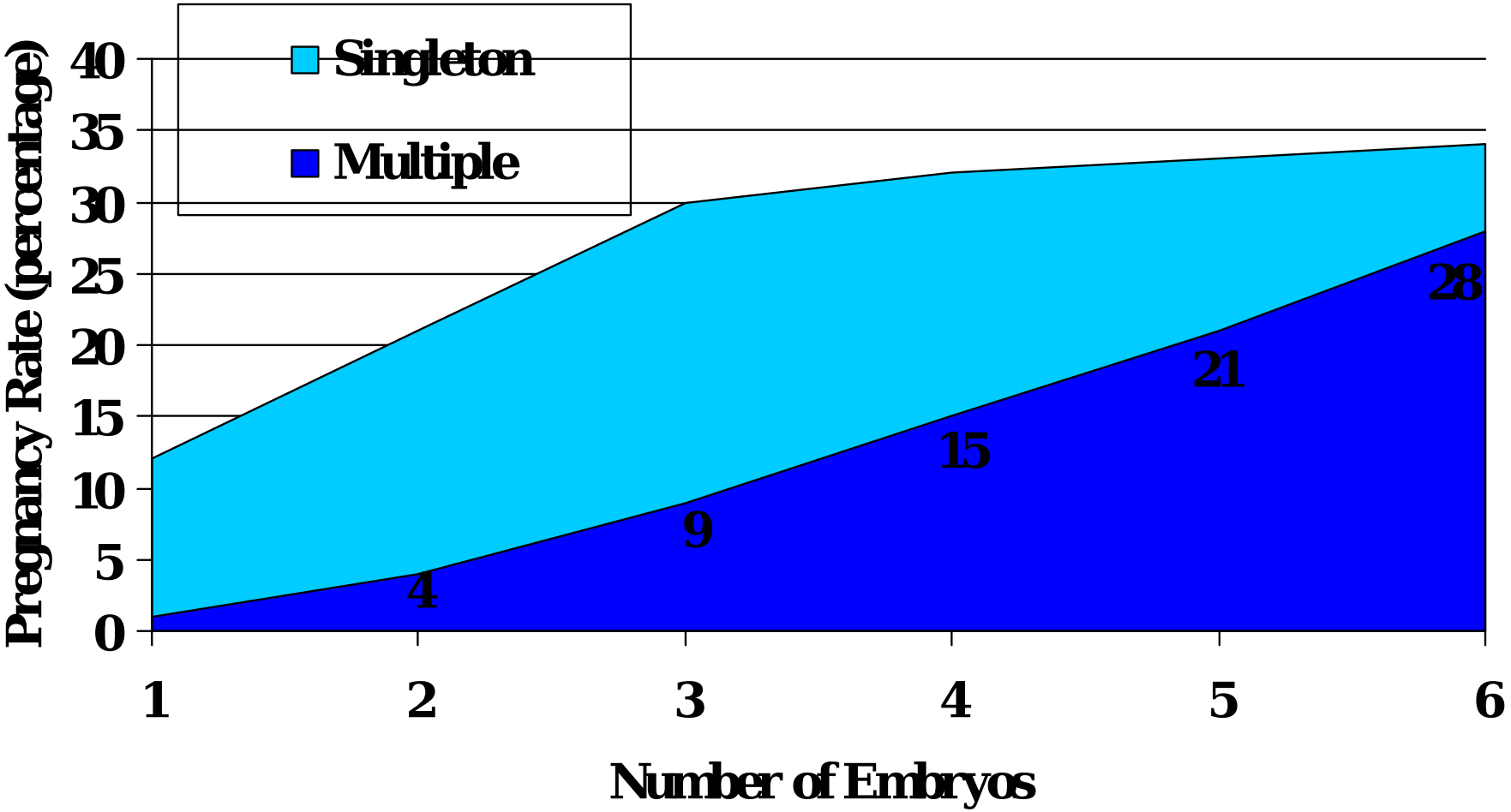
Risks of Embryo-transfer

- Infection
  - RARE
- Abnormal pregnancy
  - Ectopic (1-2%)
  - Miscarriage (15-25%)
  - Major birth defects (3%)
- Multiple gestation
  - Twins (25-40%)
  - High-order multiple gestation (2-15%)

Birth Defects

Year	Total Number of Infants Born	%Infants with birth Defect	Infants without birth Defect
1996	19,604	2.2%	191182
1997	23.848	1.9%	23,358
1998	27,201	2.1%	26,634
1999	29,777	1.8%	29,236
2000	34,555	1.7%	33,951
Total	134,985	1.9%	132,388

Multiple Rate versus Pregnancy Rates



Multiple Gestation

- **Associated with pregnancy loss, pre-term birth, cesarean section, long term maternal bed rest, maternal diabetes and hypertension, long term health consequences for the children including cerebral palsy and birth defects**

Selective Reduction

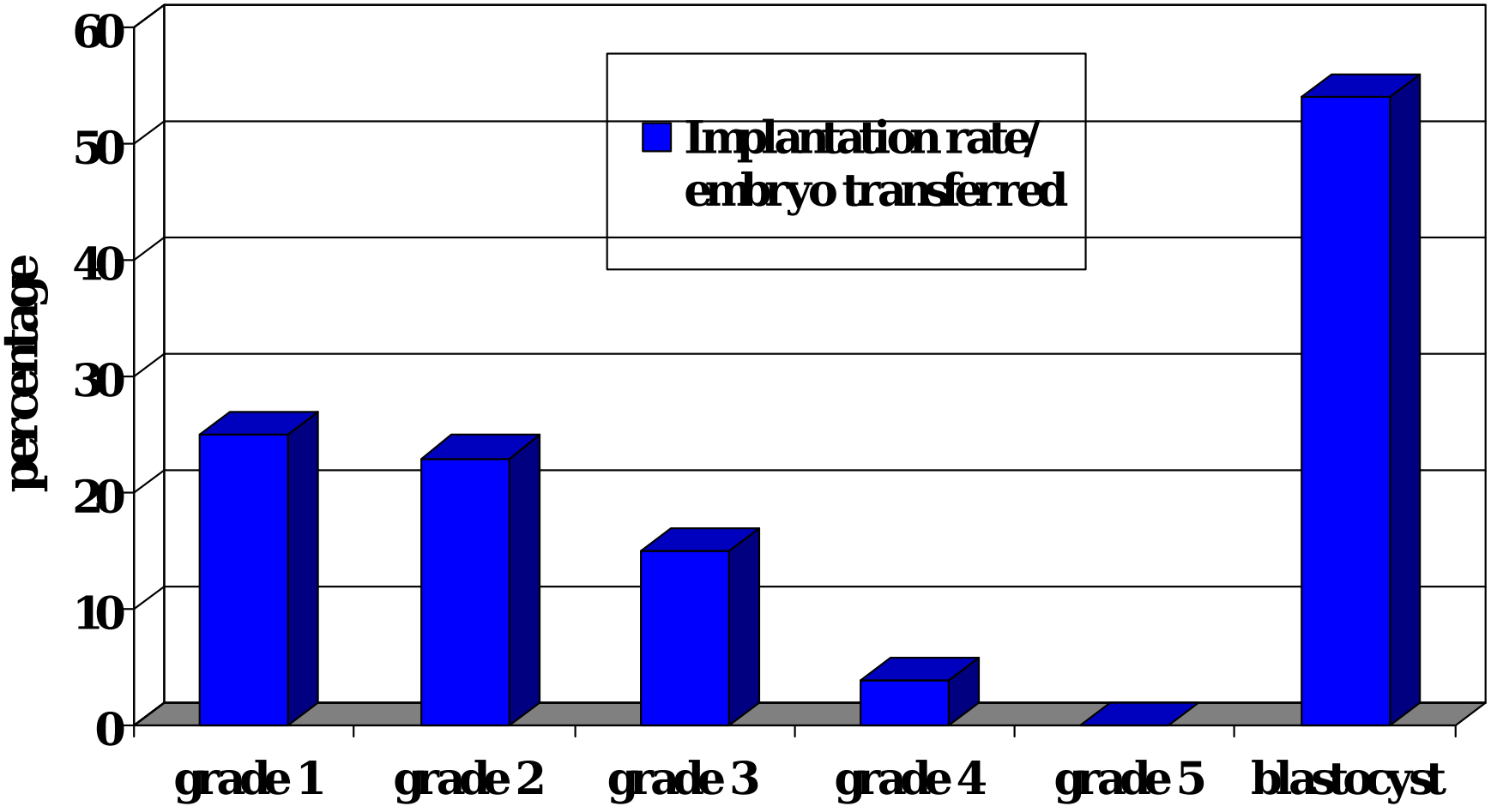
- **Reduction of high-order multiple pregnancy to twins or singleton**
- **Not done at military facility and not reimbursable**
- **Miscarriage rate approximately 10%**

Embryo-transfer

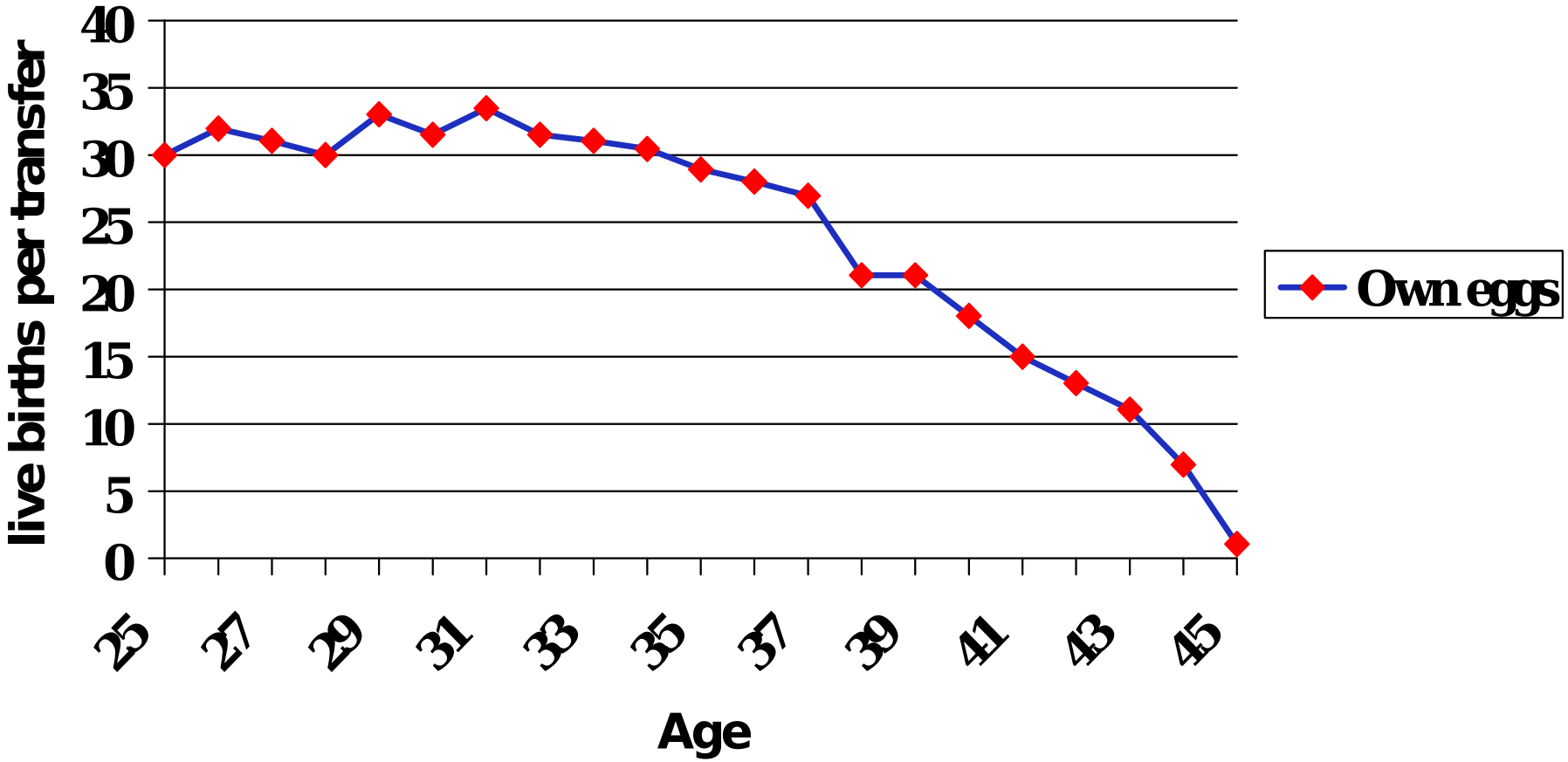
- **So how many embryos get transferred?**
  - **Embryo quality**
  - **Embryo day**
  - **Prior history**
  - **Maternal age**
  - **Couples desires and concerns**
    - **Consideration of selective reduction**

- **Not determined until day of embryo-transfer**

Embryo Grade & Implantation Rate



Live Births per Transfer for Fresh Embryos and Donor Eggs by Age



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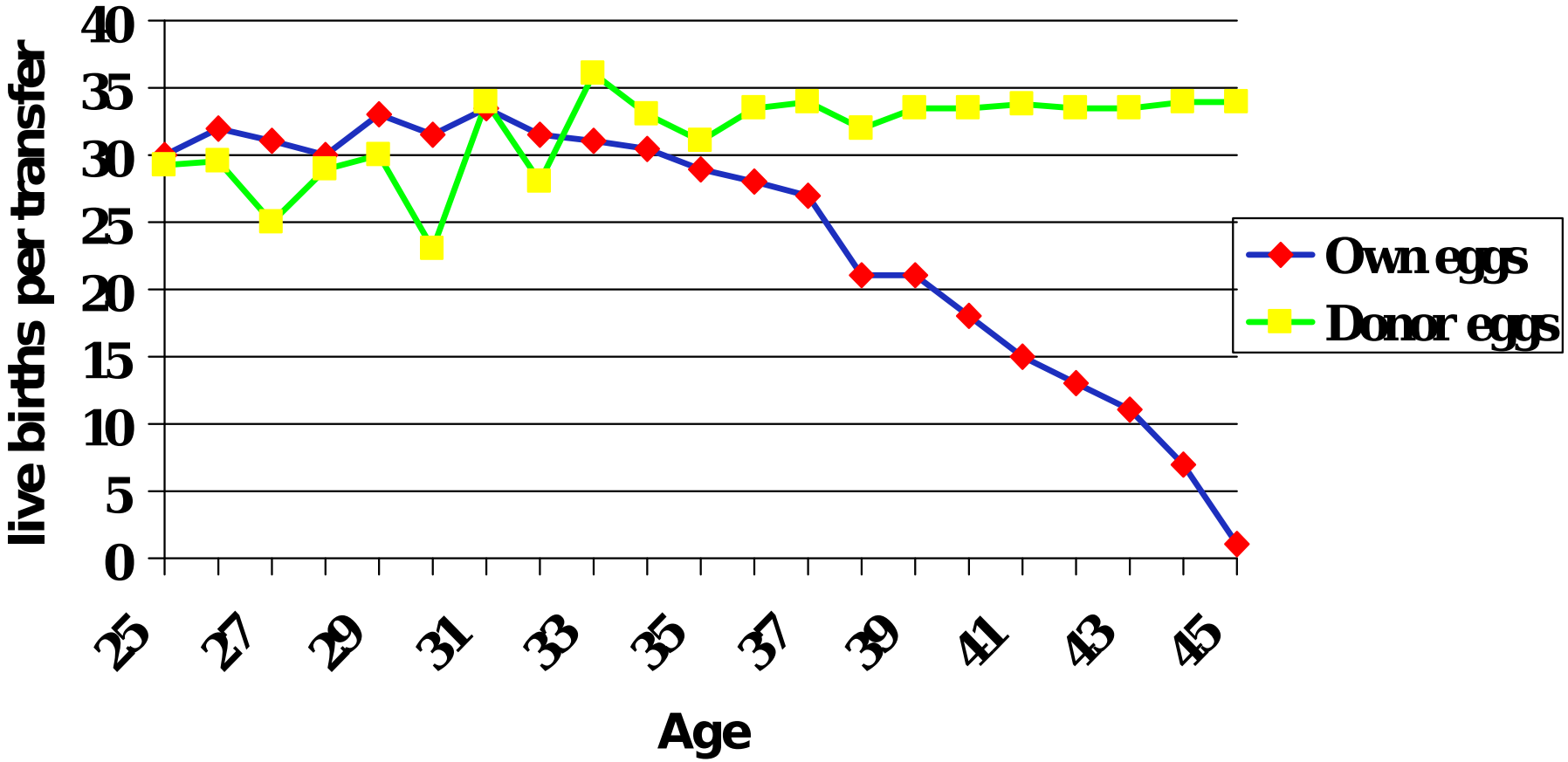
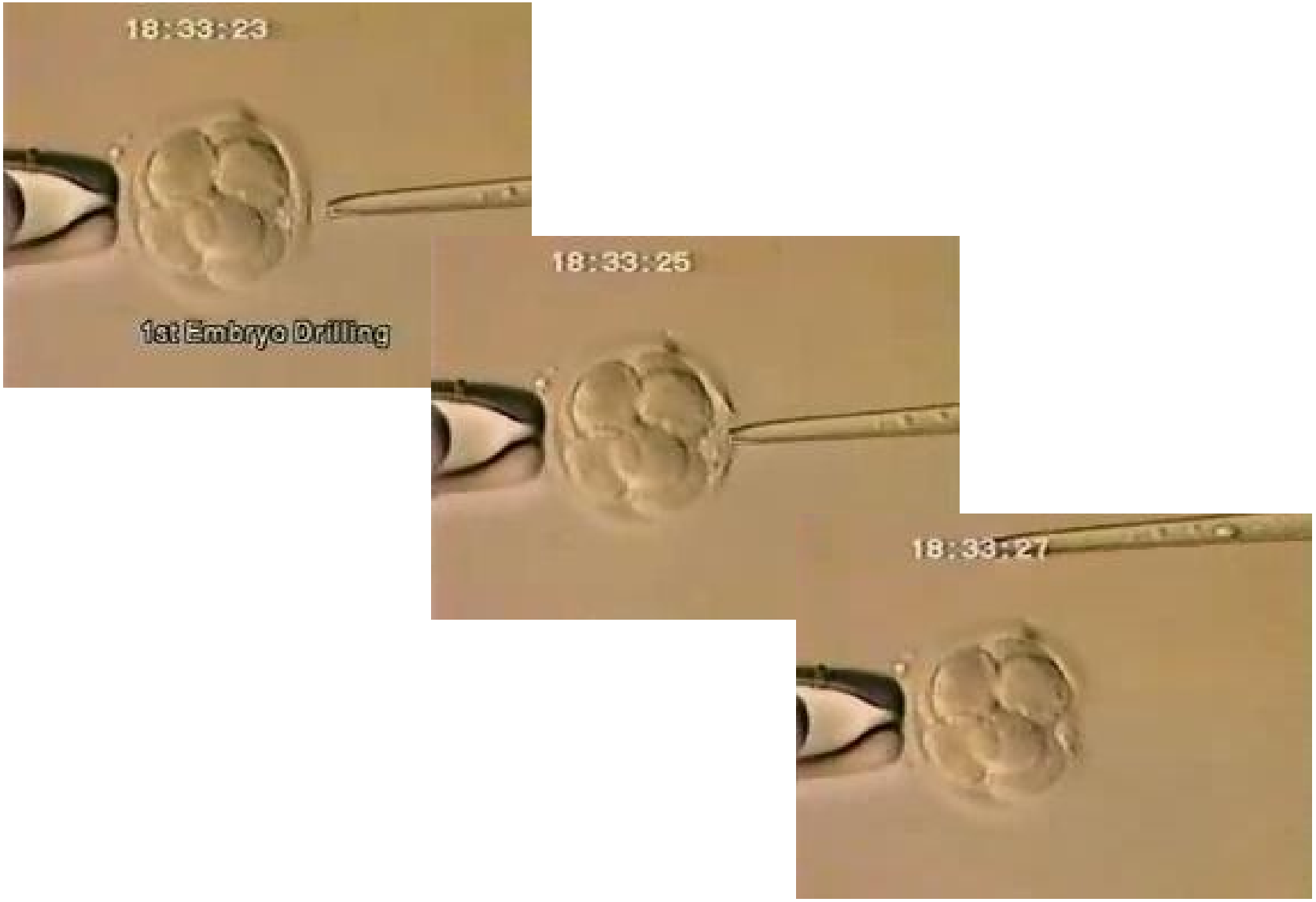


Assisted Hatching (AH)

- **Small hole made in the ZP (shell) of a day 3 embryo (not done for blastocysts)**
- **Steroids required: Solumedrol 16mg or Prednisone 20mg each day (retrieval to transfer)**

Assisted Hatching



Embryo Cryopreservation

- **Available for patients with:**
  - **Extra embryos after fresh transfer**
  - **Patients who do not get an embryo transfer for medical reasons**
- **Frozen embryos can be transferred later without the use of the injections for ovarian stimulation.**

Genetic Screening

- **All patients must complete a genetics questionnaire**
- **Dependent on age, medical conditions, and other factors counseling may be required**
- **Genetic counseling is available at NNMC**

Genetic Screening

- **Cystic Fibrosis (CF)**
  - **Screening now available and offered to all pregnant patients**
  - **Can be performed now before you get pregnant**
  - **Should you be tested?**

Cystic Fibrosis

- **Life-long incurable illness**
- **Leads to digestive and breathing problems**
- **Does not effect intelligence or appearance**
- **Usually associated with shortened life span**

Cystic Fibrosis

- **If no family history**
  - **Carrier risk**
    - **White 1/30**
    - **African American 1/65**
    - **Asian 1/90**
  - **Disease risk 1/3000**
- **If result shows you are a carrier, husband must be tested**

Federal Program of Reproductive Endocrinology

Nursing Orientation

Welcome to the ART Institute IVF Program

The Nursing Staff

- IVF Nurse Manager:
  - Donna Materia, R.N.

- IVF Nurses:
  - Darshana Naik, R.N.
  - Stephanie Hosid, R.N.

To get a Baseline

- Medically cleared
  - Complete all items on orange sheet
    - Clomiphene citrate challenge test required for all women $\geq$ 30
    - Must be done prior to starting OCPs
  - Will be reviewed by Program Director

To get a Baseline

- Financially cleared
  - Payment to ART Institute
- We will call to notify you of clearances
  - Not necessary to call us at this point

Clinic Rules

- Both partners must be registered
  - WRAMC - (202) 782-6160
  - NNMC - (301) 295-5150 or (800) 526-7101
- No children allowed in clinic or Ward 43
- You must be on time!
  - 0700 Baseline (First visit)
  - 0630 Monitoring (All other visits)
- All patients seen in order of sign-in

Clinic Rules

- Chaperones are required for all appointments
- Chaperones are not provided
  - If you come without a chaperone you will be seen at the end of the clinic when a chaperone is available
- We must have a way to contact you everyday

Clinic Rules

- Never leave clinic without:
  - Providing a contact number for that day on sign in sheet
  - Getting blood drawn for estradiol level
  - Enough medication to last until next appointment or at least 2 days

Baseline Appointment

- First day of your cycle with us
- 0700 in the GYN clinic
- Ultrasound
- Blood draw for estradiol level
  - Don’t leave clinic without Band-aid on arm!
- Review dates and drugs for cycle
- Pick up medications

Monitoring Appointment

- Follow-up
  - Begins ~ 1 week from baseline
  - 0630 in the GYN clinic
  - First monitoring day is set at baseline
    - All other monitoring days are tentative
- Blood draw for estradiol level
- Ultrasound

Medications

- Begin Prenatal Vitamins at least 1 month before baseline
- Medications are NOT covered through DOD or TRICARE
  - *Currently WRAMC is providing all drugs as a courtesy for patients enrolled in our program*
  - You must purchase Progesterone in Oil
    - Freedom Drug ~ $21.00 a vial
    - Roslyn Pharmacy ~ 21.00/vial with free overnight del. # 215-572-9770
    - Need to get 2 vials
    - Check prices!

Medications

- Birth control pills
  - Minimum of 3 weeks prior to baseline
  - Begin in evening on second day of menses
  - Take continuously (discard sugar pills)
    - DO NOT STOP UNTIL TOLD TO DO SO!

Medical Work-up

- WRAMC/ART not responsible for outside test results
- Please have all test results faxed to:
  - (202) 782-3492
- Pregnancy tests need to be performed no sooner than the date provided
  - Pregnancy tests are done in the 2nd floor lab
  - If drawn before 9 AM will be available the same day

Medical Work-up

- Saline sonogram and male evaluation must be performed at WRAMC
  - Schedule with Treena Thompson at (202) 782-6198
- Please allow one week for IVF team to get chart back before inquiring about baseline Appointments

Baseline Arrangements

- Guest House - (202)726-8700
  - Book within 30 days of lodging requirement
- Please keep us informed of where you are during cycle - answering machines, cell phones, pagers, or other phone numbers where you can be reached

Baseline Arrangements

- IVF Pager number given to you at baseline
  - Only for medical emergencies
  - Not for routine questions i.e.. Out of medication; please prepare

Injection class

- Monday/Wednesday/Friday @ 0900 in Building 1
- You will be given a map at baseline to the conference room in Bldg. 1
- Mandatory; about 1 1/2 hours

LENGTH OF IVF CYCLE

- Usually take 15 days from baseline to retrieval
  - Some women go earlier, some go later
  - Add 3-5 day on to that for embryo transfer
- May leave area 24 hours following transfer

Contacting the Nurses

- Prior to baseline
  - Call 202-782-3600 for the IVF Intake nurse
- After baseline is scheduled
  - Call 202-782-1393 or 3525 to contact the In cycle nurse
- PLEASE leave only one message on single machine

Wrap-up

- Read all handouts carefully
- Ask questions
- Please return all genetic questionnaires!
- Thank you for your attendance!

SOME THINGS TO REMEMBER

- **Do not take any NSAIDs (Motrin, Advil, Aleve, Ibuprofen, and aspirin)**
- **Tylenol O.K.**
- **Ask before taking other medications**

SOME THINGS TO REMEMBER

- **If you smoke: STOP (Yes, we mean both of you)**
- **Husbands should not use hot tubs or saunas**
- **Men and Women: Exercise is allowed in moderation i.e. walking but high impact aerobics is out**

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